THE STRIPED LYCHNIS MOTH *SHARGACUCLLIA LYCHNITIS* (RAMBUR) (LEP.:NOCTUIDAE): A REVIEW OF ITS DISTRIBUTION IN BUCKINGHAMSHIRE (VC 24) DURING 2005

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Abstract

The results of a larval count for the Buckinghamshire population of the moth Striped Lychnis *Shargacucullia lychnitis* (Rambur) during 2005 is summarised. A total of 5,075 larvae was found on 37,710 Dark Mullein *Verbascum nigrum* plants. Results are split into habitat types. Current and historical distribution are discussed as are current and future conservation measures.

Introduction

The Striped Lychnis moth *Shargacucullia lychnitis* (Rambur) is a Nationally Notable category A species (Waring, 1993; Bradley 2000). This implies that it has been recorded or is expected to be present in between 15 and 30 ten-kilometre squares within Britain. Recent surveys since 1991 reveal its presence in 10 ten-kilometre squares within Buckinghamshire. Originally placed on the 'middle' list of the UK Steering Group report (HMSO, 1995), the moth now resides on the re-structured 'priority species' list (UK Biodiversity Group Report, 1998). There has been a Species Action Plan published (UK Biodiversity Group, 1998) which summarises the position of the moth up to 1996. It states "This moth was found in scattered sites in 23 ten km squares between 1980 and 1996, in Buckinghamshire, Oxfordshire, Berkshire, North Hampshire and West Sussex. Its range has declined greatly, and within the last 25 years or so it has been lost from half of its range, including all of Wiltshire, Dorset, Surrey, East Anglia and Gloucestershire. In Europe this moth occurs in most countries from the Mediterranean to Denmark and southern Sweden. The range extends to central Asia, the Caucasus, the Urals and Russia."

In recent years, surveys within Buckinghamshire have occurred at regular intervals (Waring 1992; Albertini *et al* 1997; Halls 1997; Hall 1998, 1999, 2000, 2001). During 2005, a further large scale survey was undertaken to review the moth's current status within the county. In total, 37,710 Dark Mullein *Verbascum nigrum* plants were inspected revealing 5,075 larvae over a three week period from the second half of July until early August 2005. These surveys provide the basis for the local Species Action Plan for the county which is undertaken by Buckinghamshire County Council Countryside Services (Buckinghamshire County Council, 1997) in conjunction with Butterfly Conservation.

Results and Discussion

The survey began as near to 23 July as possible, as with all previous surveys. The survey did not manage to record all larvae – a few had already pupated and the final

plants being inspected around 10 August still revealed first instar larvae; this "mid" date does provide a good insight into population size. Large sites on warm south facing chalk slopes were inspected first as these traditionally tend to have more advanced larvae. Plants were counted rather than flower spikes in the results summaries. An average plant would have between 1 and 10 spikes, with a modal figure at 3-4. As with previous surveys there was evidence that some larvae had already pupated. These were not included in the results. Nor were dead parasitised larvae mummified on the flower spikes. Flower spike damage can also be caused by the earlier feeding larvae of the Mullein moth *S. verbasci* and also by weevils of the genus *Cionus,* making damage or frass on the lower leaves an unreliable means of detecting larvae. Where Great Mullein *V. thapsus* was found, these plants were inspected also but not included in the results as no larvae were found on this species at all. Larvae were noted in small numbers on the hybrid *V.* x *semialbum* and these results were included. However, numbers of x *semialbum* were few.

Light trap records of the moth in the county are still very few despite extensive trapping in the distribution area, so larval searches still provide the best insight into the moths' distribution. Larvae show a distinct preference for feeding on the flower spikes and will only be found on the lower leaves if competition for space and food on the spikes is too high (Albertini *et al* 1997). Fortunately the majority of tiny first instar larvae were at or close to the very tips of flower spikes making location and identification relatively easy. Larger larvae were conspicuous and highly visible. Plant locations, flowering times and the impact on the potential for larval presence were all outlined in Albertini *et al* (1997). It was again apparent that tall plants in sunny aspects that were in flower by mid July, with little competition from other vegetation, had the best chance of larvae being present. Particular plants (that fitted this bill) on occasion would be smothered in larvae. Over 80 larvae were counted on one such plant. This same plant had over 100 larvae on during the previous major survey in 2000. The "biennial" status of *V. nigrum* was discussed in Albertini *et al* (1997). Where there were large stands of suitable plants in areas of high larval numbers, often individual plants would have far more larvae than other seemingly identical plants. These tended to be at "corners" or "edges" to stands of foodplant.

This survey was the largest ever conducted and results are very encouraging. The overall picture is one of improvement. Apart from one core site which suffered damage from ditch clearance work in the winter of 2004/5, all other sites are improving. The site near to High Wycombe that had 1103 larvae recorded in 2001 (Hall 2002, Waring 2001), but subsequently suffered from overgrazing, is now under closer scrutiny and is recovering, albeit slowly. Ironically, it has gone from being severely overgrazed to being over-run by Wild Carrot *Daucus carota*. It is likely that the increase in *Daucus* was due to the effects of the overgrazing as Preston *et al* (2001) states that this species prefers calcareous soils including disturbed or open turf on chalk downs. It is hoped that things will balance out in the longer term. *Daucus* stands meant that the flower spikes of *V. nigrum* were probably in too much competition for preferred egg laying.

Table 1 shows the summary of the survey results. All habitat groups show an improvement apart from Fields and margins. However, this figure is slightly deceiving in that the large numbers of plants falling into this habitat group were swollen by one site which now has a grand total of 10,175 plants spread over four adjacent fields, but a very low density of larvae (Tall False Oat Grass *Arrhenatherum elatius* meant relatively unsuitable egg laying habitat for the moth). Total numbers of larvae increased for this group also when compared to 2000.

The concept of Core Sites has been discussed (Albertini *et al* 1997, Halls 1997, Hall 1998, 1999, 2000, 2001). It was interesting to note that the High Wycombe core site, for example, was presumed to exist before its discovery due to the appearance of low numbers of larvae in adjacent sites. So far, from five core sites identified in 2000 (Hall 2001), using the threshold of 100 larvae or more to define a core site, there have been additional discoveries and further amelioration of existing sites to now have the total stand at 11 Core Sites for the moth. This is a far more healthy state of affairs.

Of the four major habitat groups, road verges are still the preferred habitat for the moth with the best ratio of plants to larvae, although the proportion of larvae being found in this habitat diminishes with each survey. The second best habitat is Chalk Grassland, followed by Woodland. This last grouping is a little deceiving as almost all of the records are in young planted woodland (mainly on chalk grassland sites) that will soon compete out the foodplant. The last of the major habitat groups is Farmland fields and their margins, including set-aside. If the huge area already discussed above is removed from the Fields and Margins total, the ratio changes from 10.9 down to 7.2, indicating that this habitat is also fairly popular with the moth.

The overall range of the moth is not expanding at all. This has been the case for a long time (Albertini *et al* 1997) and is more a factor of foodplant availability rather than anything else. Figure 1 does show that the larval numbers are increasing but within the current boundaries. Total larval numbers follow a similar graphical trend to Figure 1 which only relates to sites that have been surveyed since 1996. The 2005 survey shows a steep upward curve, reflecting large increases in both foodplant and larval numbers. Figures 2 and 3 show the distribution of the moth in the county. Dots in the more easterly central parts of the county are more sporadic and are the result of mainly transient records. There is no core site in this area.

Action

Efforts to conserve populations of Striped Lychnis have included the designation of Roadside Verge Nature Reserves (RVNRs) and the implementation of favourable cutting regimes for these areas (Buckinghamshire County Council, 1994). For these sites, cutting has been deferred until September allowing larvae to successfully progress to the pupal stage. On some sections of verges cutting is necessary for safety reasons and in these instances contractors have been requested to avoid cutting individual *Verbascum* plants – the large flowering spikes can be seen with

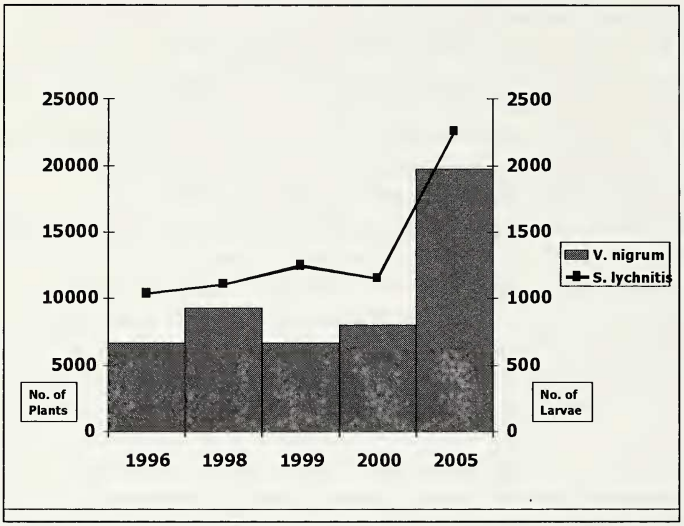

Figure 1. Larval and foodplant population trends based on comparable sites from 1996-2005.

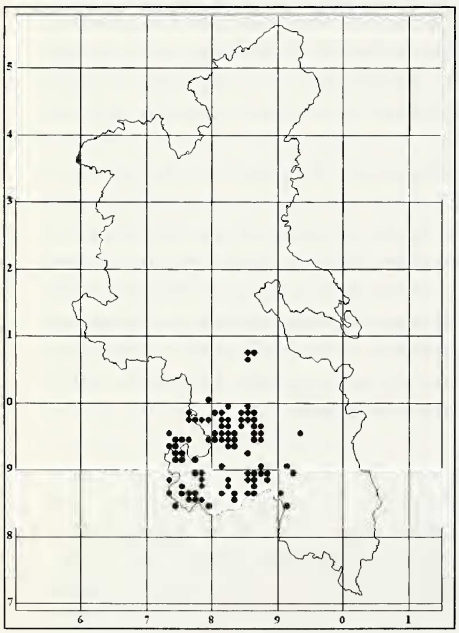

Figure 2. Distribution of sightings of Striped Lychnis in Buckinghamshire during 2005.

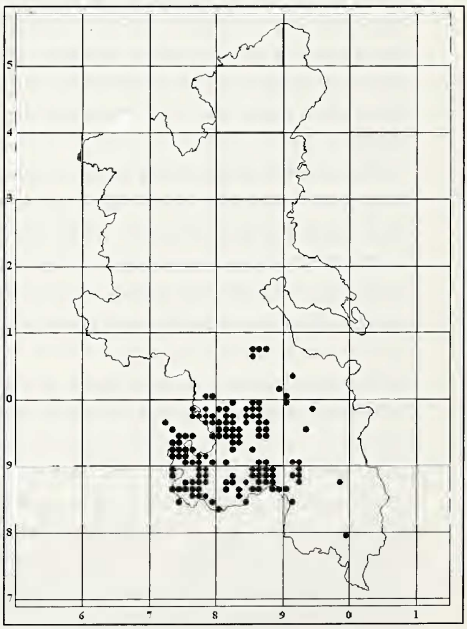

Figure 3. Distribution of sightings of Striped Lychnis in Buckinghamshire during the years 1991 to 2005.

Table. 1. Group Habitat results.

Habitat Group	Total Plants	Total Larvae	Ratio P/L	Increase Decrease
Road Verges	3707	1175	3.2	Increase
Fields & Margins	24300	2227	10.9	Decrease
Chalk Grassland	7065	1105	6.4	Increase
Woodland	1674	192	8.7	Increase
Churches & Gardens	364	173	2.1	Increase
Footpaths	330	160	2.1	Increase
Railways	270	43	6.3	Increase
All	**37710**	**5075**	**7.4**	**Increase**

relative ease enabling operators to ensure that some plants are retained. To assist this process a 'cab-card' containing information on management requirements and identification of the foodplant was produced and distributed to contractors (Halls, 1997). To date, results have been variable, in less favourable instances resource and time constraints proved to be the limiting factors. This will be reviewed again in 2006. In a small number of cases other highway activities e.g. ditch clearance have also contributed to the loss of foodplants, however, this may not prove damaging in the long term as the increased availability of bare ground provides recruitment opportunities for *Verbascum*.

Away from the highway network land, Set-aside and other agri-environment schemes have created new areas for the foodplant and moth to colonise. The presence of such land can encourage population expansion and reduce negative affects associated with fragmentation of sites. Whilst these schemes offer positive benefits, complications may arise particularly with Set-aside and the timing of compulsory mowing, which result in the loss of flowering spikes and larvae. This problem can be countered by using derogation options that allow cutting to take place later in the season (DEFRA, 2005). On agricultural land the fortunes of Striped Lychnis are likely to mirror the changing character of agri-environment schemes. Data collected during surveys will inform action to maximise conservation benefits using these land management mechanisms.

During 2005 production of a Strategic Environmental Assessment for Buckinghamshire County Council, as part of their Local Transport Plan process, has included RVNRs and proposes that they should be "given an appropriate level of protection by recognising management schedules which have been developed for each site" (TRL, 2005). This gives renewed impetus for action on the RVNR network to enhance these areas for nature conservation. Furthermore, Striped Lychnis has been put forward as an indicator species for the quality and quantity of roadside habitats, thus acknowledging the importance of this species and the role highway management can play in its conservation.

Future Surveys

The surveys of 1996, 1998, 1999, 2000 and now 2005 have shown that the overall position is sound for the moth. With this information in hand, the next major survey has been targetted for 2010. Until then, specific sites will be monitored annually and the search for new sites will continue.

Acknowledgements

Thanks go to Butterfly Conservation, Buckinghamshire County Council Countryside Services and the National Trust for their continued support of the species' action plan. Special thanks go to the following people who gave up their spare time and holidays to help with the surveying during an often wet and miserable period at the end of July and early August: Julia Carey, Anna Humphries, Eric Britnell, Alan and Juliet Gudge, Simon Pile, Ched George, Neil Harris, Jo Hodgkins, Martin Barnett and Trevor Hussey. The maps were plotted using DMAP software by Dr Alan Morton.

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